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Carbonea, Gregorella, Porpidia, Protomicarea, Rinodina, Solenopsora, and *Thelenella* lichen species new to Turkey

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Abstract—Seven species of lichenized fungi (*Carbonea vorticosa, Gregorella humida*, *Porpidia tuberculosa*, *Protomicarea limosa, Rinodina turfacea*, *Solenopsora holophaea*, and *Thelenella modesta*) are new to Turkey. *Gregorella humida* is also new to Asia. For each a short description is presented.

Key words —biota, Giresun, Ordu

Introduction

Since John (2004) listed 361 papers referring to lichens from Turkey, many additional studies have been carried out on Turkish lichen biota (e.g., Aptroot & Yazıcı 2009, Aslan et al. 2005, Candan & Özdemir Türk 2008, Çobanoglu et al. 2008, Halıcı & Aksoy 2006, Kınalıoglu 2010, Öztürk & Güvenç 2010, Oran & Öztürk 2010, Yazıcı & Aptroot 2008). However, there are still a high number of records for lichen species yet to be added. This contribution reports further first records of species new to Turkey.

Materials & methods

The collections were identified with various lichen guides (Brodo et al. 2001, Purvis et al. 1992, Smith et al. 2009, Wasser & Nevo 2005, Wirth 1995). They are deposited in the herbarium of the Faculty of Science and Arts, Giresun University, Giresun, Turkey. The collector and collection number are given in parentheses after the locality details.

Species recorded

Carbonea vorticosa (Flörke) Hertel

A detailed description is provided by Chambers et al. (2009).

Specimen examined: **TURKEY. Ordu**: Kumru, Sarıçiçek high plateau, 40°45’28”N, 37°12’51”E, 1521 m, 16 Jul. 2005, on siliceous rock, (herb. Kınalıoğlu 1802).

Thallus brownish, subsquamulose to eroded-dispersed. Apothecia 0.2–0.7 mm diam., scattered; disc black, concave, rarely plane. Epihymenium dark blue. Ascospores 7.5–12 × 3.7–5 µm, colourless, simple. Thallus C–, K–, KC–, PD+ orange.

Carbonea vorticosa is often overlooked. In other parts of its range, it grows on siliceous rock, boulders, and walls in upland to high montane habitats. In Turkey, it was collected only from siliceous rock in a sun exposed area.

Known from Europe, Asia, Australasia, Antarctica, North America and South America (Andreev 2003). New to Turkey.

Gregorella humida (Kullh.) Lumbsch

Detailed descriptions are provided by Lumbsch et al. (2005) and Woods (2009).

Specimen examined: **TURKEY. Ordu**: Ünye, the top of Ünye castle, 40°05'46"N, 37°14'22"E, 245 m, 07 Aug 2004, on siliceous rock, (herb. Kınalıoğlu 1800).

Thallus bluish grey, consisting of roundish goniocysts. Photobiont *Nostoc*. Apothecia 0.2–0.7 mm diam., numerous, roundish; disc convex, colourless when young, red-brown when mature, true exciple yellowish. Hymenium I–. Ascospores colourless, 12.5–20 × 6.5–10 µm. Thallus C–, K–, KC–, PD–.

Gregoriella humida is probably much overlooked. In other parts of its range, it is a pioneer lichen, growing on well drained acidic to somewhat basic, ± clayey soil exposed on steep banks such as in disused railway cuttings, on tipped material on roadsides and on the ground in old lead mines. In Turkey, it was collected only from siliceous rock.

Known from Europe (Cezanne et al. 2003). New to Asia.

Porpidia tuberculosa (Sm.) Hertel & Knoph

A detailed description is provided by Fryday et al. (2009).

Specimen examined: **TURKEY. Giresun**: Keşap, Değirmenağzı village, sea shore, 40°58'20"N, 38° 37'23"E, 0 m, 11 Apr. 2010, on siliceous rock, (herb. Kınalıoğlu 1809).

Thallus white to pale blue-grey, sometimes rusty red in parts; prothallus dark brown-black; soralia 0.1–0.8 mm diam., round to irregular; soredia pale grey or blue-grey. Apothecia not observed. Medulla and soralia C–, K–, KC–, I+violet, PD–.

In other parts of its range, *P. tuberculosa* is a common species found on siliceous rocks, walls, pebbles, and rarely on worked timber. In Turkey, it was collected only from siliceous rock at the sea shore.

Known from North America, South America, Asia, Europe, Macaronesia (Fryday et al. 2009). New to Turkey.

Protomicarea limosa (Ach.) Hafellner

A detailed description is provided by Coppins (2009).

Specimen examined: **TURKEY. Giresun:** Dereli, E of Kuzu gölü high plateau, 40°34'42"N, 38°29'21"E, 2200 m, 09 Aug. 2008, on dead grass, (herb. Kınalıoğlu 1803).

Thallus greyish. Apothecia 0.25–0.9 mm diam., black. Epihymenium and hymenium greenish, K–; hymenial gel I+red; hypothecium K+orange. Ascospores colourless, narrowly ellipsoid, 10–15 × 3.5–5 µm. Thallus C–, K–, KC–, PD+ orange-red.

This rare species is found on acid soil, over mosses or humus mostly above 900 m. In Turkey, *P. limosa* was collected only from dead grass in sun exposed areas at high elevation.

Known from Europe and North America (Smith et al. 2009). New to Asia.

Rinodina turfacea (Wahlenb.) Körb.

Detailed descriptions are provided by Brodo et al. (2001) and Thomson (1997).

Specimen examined: **TURKEY. Giresun:** Dereli, E of Kuzu gölü high plateau, 40°34'42"N, 38°29'21"E, 2200 m, 09 Aug. 2008, on moss, (herb. Kınalıoğlu 1808).

Thallus thick, pale brownish or grey. Apothecia abundant, 0.5–1.8 mm diam.; disc dark brown to black; concolourous with thalline exciple. Ascospores thick-walled, brown, *Physcia*-type, 22.5–35 × 10–15 µm. Thallus C–, K–, KC–, PD–.

Rinodina turfacea is found on soil, moss, decaying vegetation, peat and wood in arctic or alpine sites. In Turkey, it was collected only from moss in sun exposed areas at high elevation.

This species is known from Europe, Asia, North America, and South America (Brodo et al. 2001, Kotlov 2008, Redchenko et al. 2010). New to Turkey.

Solenopsora holophaea (Mont.) Samp.

A detailed description is provided by Gilbert at al. (2009).

Specimens examined: **TURKEY. Ordu:** Fatsa, Yalıköy, sea shore, 0 m, 13 Jul. 2005, on siliceous rock, (herb. Kınalıoğlu 1798). **Giresun**: Dereli, E of Kuzu gölü high plateau, 40°34'42"N, 38°29'21"E, 2200 m, 09 Aug. 2008, on soil, (herb. Kınalıoğlu 1799).

Thallus squamulose to 3 mm wide, upper surface red-brown when dry and olive green when wet. Apothecia 0.5–1.2 mm diam., numerous, disc dark reddish brown to black. Ascospores 2-celled, colourless, 12.5–17 × 4 µm in size. Thallus C–, K–, KC–, PD–.

In other parts of its range, this species grows on soil and soft rocks chiefly in slightly sheltered clefts on vertical cliffs or old walls at the coast. In Turkey, it was collected from siliceous rock at the sea shore and from soil in sun-exposed areas at high elevation.

Solenopsora holophaea is known from Africa, Asia, Europe, Macaronesia, North America, and South America (Güvenç & Öztürk 1999, Smith et al. 2009). New to Turkey.

Thelenella modesta (Nyl.) Nyl.

Detailed descriptions are provided by Smith et al. (2009) and Wasser & Nevo (2005).

Specimen examined: **TURKEY. Ordu**: Kumru, Ericek high plateau, 40°53'35"N, 37°13'48"E, 1120 m, 16 June 2005, on *Juglans regia* L. (*Juglandaceae*), (herb. Kınalıoğlu 1813).

Thallus pale yellowish-grey. Perithecia 0.3–0.8 mm diam., rounded, sparse. Ascospores muriform, colourless, 25–42 × 10–17 µm. Thallus C–, K–, KC–, PD–.

Elsewhere in its range growing on ± rough bark of wayside or parkland *Fraxinus,* twigs of *Crataegus*, and smooth bark of *Quercus agrifolia* and *Juglans californica*. In Turkey, we recorded it from the trunk of *Juglans regia*.

Thelenella modesta is known from Europe, North America, Asia, Africa, and Australia (Smith et al. 2009, Wasser & Nevo 2005). New to Turkey.

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